

REMARKS

Applicants thank the Examiner for his careful consideration of the subject patent application. The Examiner has rejected claims 1-7, and 10-18 under 35 U.S.C. §102(b) as anticipated by Takaoka *et al* (US 6,393,834). Applicants respectfully disagree with the Examiner's rejections.

Rejection of Claim 1:

Claim 1 claims:

1. A method for controlling a temperature of an emission control device receiving exhaust gases from an engine, the emission control device being coupled adjacent and downstream of an oxidation catalyst, said method comprising:  
adding a reductant to said exhaust gases; and  
controlling a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control device.

In other words, Applicants teach injecting reductant into the exhaust gas exiting the engine and controlling introduction of the resulting mixture into an oxidation catalyst. As is described on page 2, lines 21-31 of the Summary of the Invention, this results in the ability to accurately control the temperature of both the oxidation catalyst and the downstream emission control device without damaging the emission control device by directly burning the fuel in it (see also specification page 4, lines 10-30).

Takaoka, on the other hand, teaches a nitrogen oxides absorbent 26 located downstream of a three way catalyst (TWC) 23 (see Figure 1, and column 3, lines 42-67). Further, fuel feeder 26 is disposed between the three way catalyst 23 and the NOx absorbent 26. The fuel injection raises the temperature of the NOx absorbent by being burned in the NOx absorbent (column 4, lines 24-31).

Therefore, Applicants respectfully submit that Claim 1 is not anticipated by the cited reference. On the contrary, Takaoka is missing all of the claimed limitations of the present invention. Applicants teach adding reductant upstream of the oxidation catalyst and controlling the mixture entering the oxidation catalyst to control the temperature of the emission control device while Takaoka teaches injecting reductant directly into the NOx absorbent to increase the temperature of the absorbent. Also, Takaoka teaches a three way catalyst, not an oxidation catalyst, positioned upstream of the NOx absorber.

Based on the above comments, Applicants respectfully request withdrawal of the rejection of Claim 1. Applicants further submit that Claims 2-9 depend from allowable Claims 1, and are therefore allowable.

Rejection of Claim 10:

Claim 10 claims:

10. A method for controlling a temperature of an emission control device being coupled proximate and downstream of an oxidation catalyst, said method comprising:
- indicating when one of NO<sub>x</sub> and Sox needs to be removed from said emission control device;
  - adding fuel to said exhaust gases; and
  - controlling a mixture of said exhaust gases and said fuel flowing into said oxidation catalyst to control a temperature of said device when removing said indicated one of NO<sub>x</sub> and Sox from the device.

The Examiner Rejected Claim 10 on the same grounds as Claim 1. Applicants respectfully disagree with the rejection.

First, Takaoka teaches a three way catalyst coupled upstream of a NO<sub>x</sub> absorber wherein fuel is injected directly into the NO<sub>x</sub> absorber to raise its temperature in order to remove Sox. Applicants, on the other hand, teach an oxidation catalyst coupled upstream of an emission control device wherein fuel is injected into an exhaust gas upstream of the oxidation catalyst. Applicants specifically state that injecting fuel into the oxidation catalyst rather than into the emission control device is advantageous as it prevents thermal damage to the device due to temperature spikes caused by fuel burning. Second, Applicants cannot find, and the Examiner has not specifically pointed out, any teaching or even mention in the cited reference of indicating whether NO<sub>x</sub> or SO<sub>x</sub> needs to be removed from the device and controlling the mixture of exhaust gases and fuel flowing into the oxidation catalyst to control a temperature of said device when removing one of NO<sub>x</sub> and Sox from the device. Takaoka does mention raising the temperature of the NO<sub>x</sub> absorber to remove SO<sub>x</sub>, and restoring NO<sub>x</sub> absorbing capacity of the NO<sub>x</sub> absorber by switching to an air-fuel ratio rich of stoichiometry (e.g. see abstract), but that is not what is claimed by the present invention.

Therefore, Applicants respectfully submit that Claim 10 is patentable and not anticipated by Takaoka, and allowance is respectfully requested.

Rejection of Claim 11:

Claim 11 claims:

11. A system for controlling a temperature of an emission control device receiving exhaust gases from an engine, the device being adjacent and downstream of an exhaust catalyst, said system comprising:
  - a reductant valve selectively supplying reductant to said exhaust gases responsive to a first signal;
  - a throttle valve controlling flow of said exhaust gases to said oxidation catalyst responsive to a second signal; and
  - a controller operably connected to said reductant valve and said throttle valve, said controller generating said first and second signals to control a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control device.

The Examiner rejected Claim 11 on the same grounds as Claims 1 and 10. Applicants respectfully disagree with the rejection. In the interests of brevity, Applicants' comments with respect to Claims 1 and 10 are fully applicable to Claim 11 and are herein incorporated by reference. Therefore, Applicants submit that Takaoka is missing any teaching or even a suggestion of injecting a reductant and exhaust gas mixture into an oxidation catalyst coupled upstream of an emission control device. Further, Takaoka teaches a three way catalyst, not an oxidation catalyst, coupled upstream of a NOx absorber. Additionally, Takaoka does not teach a valve controlling flow of exhaust gases to the oxidation catalyst. The Examiner alleges that throttle valve 13 is such a device, however, in Figure 1 of the cited reference it is clearly shown that throttle valve 13 is positioned in the engine intake, not exhaust pipe (also see column 3, lines 15-25). Further, since there is no teaching of a valve controlling the flow of exhaust gases, there can be no teaching of a controller connected to the throttle valve, controlling the introduction of reductant and exhaust gas into the oxidation catalyst.

Based on the above, Applicants respectfully submit that Takaoka is missing critical claimed limitations of the present invention as claimed by Claim 11. Therefore, Claim 11 is patentable over and is not anticipated by Takaoka, and allowance is respectfully requested. Further, Claims 12-14 depend from allowable Claim 11 and are also allowable.

Rejection of Claim 15:

Claim 15 claims:

15. An article of manufacture, comprising:

a computer storage medium having a computer program encoded therein for controlling a temperature of an emission control device receiving exhaust gases from an engine, the emission control device being coupled adjacent and downstream of an oxidation catalyst, the computer storage medium comprising: code for adding a reductant to said exhaust gases; and code for controlling a mixture of said exhaust gases and said reductant flowing into said oxidation catalyst to control a temperature of said emission control device.

The Examiner rejected Claim 15 on the same grounds as Claim 1. Applicants respectfully disagree with the Examiner's rejection. Applicants' comments with respect to Claim 1 are fully applicable to Claim 15 and are herein incorporated by reference.

Therefore, Applicants respectfully submit that Claim 15 is patentable over the cited reference and allowance is respectfully requested. Further, Claims 16-18 depend from patentable Claim 15, and should therefore also be allowed.

No other art is cited in the Office Action. Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.

Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No.06-1505.

Respectfully submitted,



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